

Notice of Allowability

Application No.

10/501,824

Examiner

Mujtaba K. Chaudry

Applicant(s)

STEK ET AL.

Art Unit

2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 10/18/2006.
2. ☒ The allowed claim(s) is/are 1-14.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 10/18/2006
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

ALBERT DECADY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on October 18, 2006 has been entered.

Information Disclosure Statement

The reference listed in the information disclosure statement (IDS) submitted on October 18, 2006 has been considered. The submission is in compliance with the provisions of 37 CFR 1.97.

Examiner's Amendment

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

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Authorization for this examiner's amendment was given in a telephone interview with Michael Belk on Friday, October 27, 2006.

Please amend the application as follows:

Please replace preamble (lines 1-3) of claim 12 with:

A computer readable medium storing codevectors (C) of an error correcting code encoded by a method comprising:

Please replace preamble (lines 1-4) of claim 13 with:

A computer readable medium storing codevector (C) of an error correction code encoded by a method for one type of information and also storing codeword (E) for another type of information, the method comprising:

Please replace preamble (lines 1-5) of claim 14 with:

A computer readable medium comprising program code means for performing the steps of encoding user data into codewords (C) of an error correcting code (ECC) when said computer program runs on a computer, the method comprising:

Reasons for Allowance

Claims 1-14 are allowed. The following is a statement of reasons:

The present invention pertains to a method of encoding user data into codevectors (C) of an error correcting code (ECC), comprising the steps of: generating a first block (B) of a fixed first number (Z1) of data symbols by taking a fixed second number (Z2), being smaller than said first number (Z1), of user data symbols (U), and a fixed third number (Z3) of dummy data symbols (D), and by arranging said user data symbols (U) and said dummy data symbols (D) in a predetermined order, encoding said first block (B) of data symbols using an ECC encoder (2) to obtain a codeword (E) having a fixed number of symbols, said codeword (E) comprising said first block (B) of data symbols and a second block of a fixed forth number (Z4) of parity symbols (P), and generating a codevector (C) by selecting a fifth predetermined number (Z5) of user data symbols (U2) and a sixth predetermined number (Z6) of parity symbols (P1) from said codeword (E), the sum of said fifth and sixth number being predetermined and smaller than the sum of said second and forth number. The prior art of record, Seshadri et al., teach information that is coded using a multi-level channel code, by which is meant that a) each class of information is redundancy coded using a different, respective channel code and that b) the resulting multi-level-coded words select for transmission signal points of a predetermined signal constellation. In preferred embodiments, the minimum Hamming distance (defined below) for the code used for any particular class of information is greater than the minimum Hamming distance for the code used for any less important class of information. The error probability for channels characterized by Rayleigh fading assuming adequate interleaving, and coherent or differential coherent detection, at high SNR is, to a first, and typically adequate, approximation, proportional to the

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reciprocal of the signal-to-noise ratio (SNR) raised to the power of the minimum Hamming distance. In particular, Seshadri et al. teach a transmitter apparatus comprising, a means for encoding first and second portions of a stream of input data using first and second redundancy codes, respectively, to generate multi-level-coded words each of which has a value and includes at least one data element from each encoded portion, said first code having a minimum Hamming distance that is greater than a minimum Hamming distance of said second code, a means for selecting signal points of a predetermined signal constellation as a function of the values of said multi-level-coded words, and a means for transmitting a signal representing the selected signal points over a fading communication channel, said constellation and codes being such that, in the transmission of said signal, a probability of error for said first portion is less than a probability of error for said second portion. However, the prior arts of record do not teach nor fairly suggest encoding user data into codevectors (C) of an error correcting code (ECC), comprising the steps of: generating a first block (B) of a fixed first number (Z1) of data symbols by taking a fixed second number (Z2), being smaller than said first number (Z1), of user data symbols (U), and a fixed third number (Z3) of dummy data symbols (D), and by arranging said user data symbols (U) and said dummy data symbols (D) in a predetermined order, encoding said first block (B) of data symbols using an ECC encoder (2) to obtain a codeword (E) having a fixed number of symbols, said codeword (E) comprising said first block (B) of data symbols and a second block of a fixed forth number (Z4) of parity symbols (P), and **generating a codevector (C) by selecting a fifth predetermined number (Z5) of user data symbols (U2) and a sixth predetermined number (Z6) of parity symbols (P1) from said codeword (E), the sum of said**

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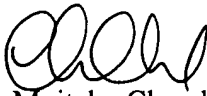
fifth and sixth number being predetermined and smaller than the sum of said second and forth number.

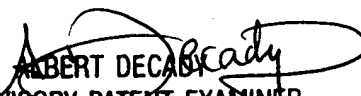
Independent claims 2 and 10-14 recite similar limitations to those of claim 1—along with additional limitations—and therefore are allowable for the reasons stated herein.

Claims 3-9 depend from independent claim 1 and inherently include limitations therein and therefore are allowable as well.

Any inquiries concerning this communication should be directed to the examiner, Mujtaba Chaudry who may be reached at 571-272-3817. The examiner may normally be reached Mon – Thur 6:30 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, please contact the examiner's supervisor, Albert DeCady at 571-272-3819.


Mujtaba Chaudry
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October 24, 2006


ALBERT DECADY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100